Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of cooling a target tissue region inside a human body, the method comprising:

providing non-oxygenated fluid cooled below normal human body temperature of about 37 degrees Celsius and oxygenated blood at a normal human body temperature of about 37 degrees Celsius to the tissue region in proportions to cool the tissue region and maintain, for an extended period of time greater than two minutes, the temperature of the tissue region within a target temperature range that is one to nine degrees Celsius below the normal body temperature, wherein the oxygenated blood is provided so that any continuous period of time during which the tissue region is deprived of oxygenated blood while the non-oxygenated fluid is being provided continues for less than two minutes, and further wherein the providing of the blood at the normal body temperature to the tissue region is performed using a catheter that occludes a vessel upstream from the tissue region and permits a selected amount of blood to flow through a lumen in the catheter and to the tissue region.

2. (Original) The method of claim 1 wherein the cooled fluid and the blood at normal body temperature are provided to the tissue region simultaneously.

3. (Canceled)

4. (Currently Amended) The method of claim 1 [[3]] wherein the catheter also performs the providing of cool fluid to the tissue region.

5-6. (Canceled)

7. (Original) The method of claim 1 wherein a catheter positioned in a vessel in fluid communication with the tissue region provides the fluid to the tissue region through a lumen that extends longitudinally through the catheter, the lumen having a diameter of at least twenty thousandths of an inch.

8. (Original) The method of claim 1 wherein the temperature of the tissue region is maintained within the target temperature range that is below normal body temperature for a time period beyond the normal length of time a tissue region is deprived of oxygenated blood during a heart procedure.

9. (Original) The method of claim 8 wherein the normal length of time a tissue region is deprived of oxygenated blood during a heart procedure is about two minutes.

10. (Original) The method of claim 1 wherein the temperature of the tissue region is maintained within the target temperature range for at least about two minutes.

11. (Original) The method of claim 1 wherein the temperature of the tissue region is maintained within a target temperature range of about 28 to 36 degrees Celsius.

12. (Original) The method of claim 1 wherein the providing of fluid and blood to cool the target tissue region is performed during a procedure to open a lesion in a vessel.

13. (Original) The method of claim 1 wherein a control system controls the providing of fluid and blood to the tissue region.

14. (Currently Amended) A method of cooling a target tissue region inside a human body, the method comprising:

occluding a human body vessel to prevent normal blood flow to the tissue region;

providing, while the body vessel is occluded, cooled fluid to the tissue region to cool the tissue region below normal body temperature of about 37 degrees Celsius;

recommencing normal blood flow to the tissue region by removing the occlusion in the body vessel;

preventing normal blood flow to the tissue region again by occluding the body vessel before the temperature of the tissue region returns to normal body temperature; and

providing, while the body vessel is occluded, cooled fluid to the tissue region again to maintain the temperature of the tissue region below the normal body temperature of about 37 degrees Celsius.

15. (Original) The method of claim 14 wherein the body vessel is occluded to prevent normal blood flow to the tissue region by inflating a balloon positioned in the vessel.

16. (Original) The method of claim 14 wherein a catheter positioned in a vessel at a location upstream from the tissue region provides the fluid to the tissue region through a lumen extending longitudinally through the catheter, the lumen having a diameter of at least twenty thousandths of an inch.

17. (Original) The method of claim 14 wherein a control system controls the occluding of the body vessel and the providing of cooled fluid to the tissue region to maintain the temperature of the tissue region below normal body temperature.

18. (Currently Amended) A method of cooling a target tissue region inside a human body, the method comprising:

restricting normal blood flow to the tissue region so that only a desired amount of blood is provided to the tissue region; and

providing cool fluid to mix with the blood provided to the tissue region so as to cool the tissue region below normal body temperature of about 37 degrees Celsius and to maintain, for an extended period of time greater than two minutes, the temperature of the tissue region within a target temperature range that is one to nine degrees Celsius below the normal body temperature of about 37 degrees Celsius.

19-20. (Canceled)

21. (Currently Amended) The method of claim 18 wherein the temperature of the tissue region is maintained within the target temperature range that is below the normal body temperature for a time period beyond the normal length of time a tissue region is deprived of oxygenated blood during a heart procedure.

22. (Original) The method of claim 21 wherein the normal length of time a tissue region is deprived of oxygenated blood during a heart procedure is about two minutes.

23. (Original) The method of claim 18 wherein the temperature of the tissue region is maintained within the target temperature range for at least about two minutes.

24. (Original) The method of claim 18 wherein a catheter positioned in a vessel in fluid communication with the tissue region provides the fluid to the tissue region through a lumen that extends longitudinally through the catheter, the lumen having a diameter of at least twenty thousandths of an inch.

25. (Original) The method of claim 18 wherein a control system controls the providing of fluid to the tissue region to maintain the temperature of the tissue region below normal body temperature.

26-40. (Canceled)

41. (New) A method of cooling a target tissue region inside a human body, the method comprising:

providing non-oxygenated fluid cooled below normal human body temperature of about 37 degrees Celsius and oxygenated blood at the normal human body temperature of about 37 degrees Celsius to the tissue region in proportions to cool the tissue region and maintain, for an extended period of time greater than two minutes, the temperature of the tissue region within a

target temperature range that is one to nine degrees Celsius below the normal human body temperature of about 37 degrees Celsius, wherein the oxygenated blood is provided so that any continuous period of time during which the tissue region is deprived of oxygenated blood while the non-oxygenated fluid is being provided continues for less than two minutes, and further wherein the providing of the blood at the normal body temperature to the tissue region is performed using a catheter that occludes a vessel upstream from the tissue region and permits a selected amount of blood to flow through a lumen in the catheter and to the tissue region.

42. (New) The method of claim 41 wherein the cooled fluid and the blood at normal body temperature are provided to the tissue region simultaneously.

43. (New) The method of claim 41 wherein the catheter also performs the providing of cool fluid to the tissue region.

44. (New) The method of claim 41 wherein a catheter positioned in a vessel in fluid communication with the tissue region provides the fluid to the tissue region through a lumen that extends longitudinally through the catheter, the lumen having a diameter of at least twenty thousandths of an inch.

45. (New) The method of claim 41 wherein the temperature of the tissue region is maintained within the target temperature range that is below normal body temperature for a time period beyond the normal length of time a tissue region is deprived of oxygenated blood during a heart procedure.

46. (New) The method of claim 45 wherein the normal length of time a tissue region is deprived of oxygenated blood during a heart procedure is about two minutes.

47. (New) The method of claim 41 wherein the temperature of the tissue region is maintained within the target temperature range for at least about two minutes.

48. (New) The method of claim 41 wherein the providing of fluid and blood to cool the target tissue region is performed during a procedure to open a lesion in a vessel.

49. (New) The method of claim 41 wherein a control system controls the providing of fluid and blood to the tissue region.